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56 Publications to be taken into account in evaluating patentability
DE 31 32 152 A1
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54 Roof batten with ventilation and drainage channels

Description

The invention relates to a roof batten with an essentially rectangular profile according to the generic term of claim 1.

Such roof battens generally consist of wood and are nailed onto the rafters of a roof truss. In this process, a broad side surface, which forms the attachment surface of the roof batten, is placed flat against an underlayment mounted on the rafters. The underlayment prevents moisture from penetrating through the joints of the sheathing into the roof. Because of the flat placement of the roof battens on the underlayment, only insufficient aeration of the intermediate space between the sheathing and the underlayment is guaranteed. In the direction of the pitch of the roof, that is, between the head and the eaves, aeration is inhibited by the roof battens progressing at right angles to the pitch of the roof. Also inhibited is the drainage of fluid forming as a result of condensation, air suction or air pressure in the intermediate space between the sheathing and the underlayment.

In the prior art, proposals to solve this problem are known in which the roof battens are not nailed directly to the rafters; instead, additional spacers are attached to the rafters between the underlayment and the roof batten, so that the roof battens no longer rest flat against the underlayment. But this solution is also disadvantageous. On the one hand, it requires additional work steps and additional material. On the other hand, the space between the sheathing and the underlayment is enlarged.

For this reason, the goal of the invention is to further develop a generic roof batten with regard to improved aeration and water drainage in the intermediate space between the sheathing and the underlayment.

This goal is achieved with the invention specified in claim 1.

The dependent claims represent advantageous further developments of the invention.

According to the invention, the roof batten has, on a broad side surface, a plurality of grooves, which progress at right angles to the direction of extension of the roof batten and form aeration and drainage channels. The shape of the grooves is preferably curved and/or semicircular. As a result of the flat placement of the roof batten on the underlayment, channels progressing in the direction of the pitch of the roof are formed for ventilation and fluid drainage in the direction of the eaves. Dependent on climatic conditions, the focus is on either aeration of the intermediate space or water drainage. The grooves are preferably spaced at regular intervals relative to one another. In this connection, the distance between the grooves should be smaller than the width of the standardized roof battens. This ensures that an aeration or drainage channel also forms in the area of support of the roof batten on the rafter. According to a preferred embodiment, the grooves have the shape of a half-cone. On the roof batten side, the semicircular cross-section of the groove has a larger diameter than on the opposite side. In other words, the groove tapers in a crosswise direction. In another embodiment of the invention, it is provided that the openings on the side with the larger diameter come into contact with one another. As a result of this form, it is possible to design optimal drainage channels. In the case of a roof truss in which the roof battens are arranged at right angles to the rafters in such a way that the wider openings of the grooves face the head, crosswise edges in which fluid accumulations can develop do not form at the edge of the underlayment. As a result of the wider openings coming into contact with one another, there are no angle regions, on the head side, progressing at right angles to the pitch of the roof between the underlayment and the roof batten. The roof batten according to the invention can be made of wood, wherein the grooves can be milled. However, it is also provided that the grooves are produced by means of bores, especially cylindrical or conical bores, wherein a batten with double thickness is initially provided with the corresponding bores and is then divided in this plane. Another preferred embodiment of the invention provides that the roof batten consists of a synthetic material, preferably a recycled material. In this connection, structurally reinforced fiber material made of synthetic or non-synthetic material can be mixed into the synthetic material. The production of the roof batten is preferably accomplished by means of an extruder. Using suitable tools, the grooves can be pressed into the extruded material during the extrusion process.

In the following, exemplary embodiments of the invention are explained on the basis of the appended drawings.

Fig. 1 shows a section of a roof truss, according to the invention, with a first embodiment of roof battens according to the invention.

Fig. 2 shows a perspective view of a roof batten of the first embodiment.

Fig. 3 shows a section according to line III-III in Fig. 4.

Fig. 4 shows a roof batten according to Fig. 2, as viewed from below.

Fig. 5 shows a section through a rafter in the region in which it is covered with a roof batten of the first exemplary embodiment.

Fig. 6 shows a depiction, according to Fig. 2, of a second exemplary embodiment.

Fig. 7 shows a section according to line VII-VII in Fig. 8.

Fig. 8 shows a bottom view of the second exemplary embodiment.

Fig. 9 shows a third exemplary embodiment of the invention according to Fig. 2.

Fig. 10 shows a section along line X-X in Fig. 11, and

Fig. 11 shows a bottom view of the third exemplary embodiment.

Fig. 1 shows a section of a roof with rafters 4 progressing in the direction of the pitch of the roof. The rafters 4 terminate at the head, at one end, and at the eaves, at the other. Roof battens 6 are nailed to the rafters at right angles to the direction of the pitch of the roof. An underlayment 3 consisting of plastic or the like extends between the rafters 4 and the roof battens 6. The underlayment 3 is impermeable to fluid but can be permeable to air.

The mounting surface 2 of the roof batten 1 lies flat on the underlayment 3. The mounting surface 2, formed from a broad side surface of the roof batten 1, which is rectangular in profile, has, in this connection, grooves 7 progressing at right angles to the direction of extension of the roof batten 1.

The grooves 7 are formed by semi-cylindrical recesses in the first exemplary embodiment and by semi-conical recesses in the two other exemplary embodiments. The grooves 7 form, in interaction with the underlayment 3, closed channels through which air can flow in the direction of the pitch of the roof. Depending on the climatic conditions of the application case, these grooves 7 can also form drainage channels for fluid that develops between the underlayment 3 and the sheathing that rests on the support surfaces 6 of the roof batten. The support surface 6 forms a mounting edge 5 for mounting the sheathing. The support surface 6 is disposed opposite the mounting surface 2. The channels are separated from one another and thus possess the characteristics of connecting tubes between the two adjacent rows of sheathing.

The grooves 7 are disposed at regular distances from one another. The distance between the grooves 7 is less than the width of a rafter 4 on which the roof batten 1 lies. As a result, closed channels 8 are formed at the bottom by the underlayment 3 lying on the rafter 4, said channels being aligned with the overlapping region of the roof batten 1 on the rafter 4. The roof batten 1 is attached to the rafter 4 with one nail 9.

In the exemplary embodiment shown in Figs. 6 to 8, the shape of the grooves 7 is essentially semi-conical. The grooves taper in a direction at right angles to the direction of extension of the roof batten 1.

In areas where climatic conditions result in frequent condensation of fluids on the roof underlayment 3, the openings with the largest diameters can be oriented toward the head. This results in the formation of drainage funnels, which are optimized in the exemplary embodiment shown in Figs. 9 to 11.

In contrast, if the principal focus is on achieving the greatest possible aeration of the space between the underlayment 3 and the sheathing, it is also conceivable to arrange the sides with the largest diameter in the direction of the eaves.

In the exemplary embodiment shown in Figs. 9 to 11, the spacing between the grooves 7 is reduced. In this connection, the spacing is selected so that the fronts 71 [sic – should be 7'] of the grooves 7, which have a larger cross-sectional area than the opposing fronts 7" in the region of the mounting surface 2, come into contact with the respective adjacent front openings. As a result of this design, optimal drainage characteristics are provided if the front surfaces 7" extend toward the head. Despite the mounting surface 2 of the roof batten 1 laying flat on the underlayment 3, valleys progressing at right angles to the pitch of the roof, in which moisture can accumulate, do not form. Instead, the moisture is drained across the entire surface region of the underlayment, that is, especially across the rafters 4 in the direction of the eaves.

The characteristics of the invention disclosed in the above description, the drawing and the claims can be of significance to the implementation of the invention both individually and in any combination. All disclosed characteristics are relevant to the invention. The full disclosure content of the corresponding/appended priority documents (copy of the preliminary application) is hereby also included in the disclosure of the invention.

Claims

1. Roof batten (1) having an essentially rectangular profile, wherein a mounting surface (2) is formed by a broad side surface, for essentially flat placement onto an underlayment (3), wherein the mounting surface (2) is disposed opposite a supporting surface (6) adjacent to a mounting edge (5) for acceptance of the sheathing, **characterized by** a plurality of aeration and drainage channels formed as grooves (7) progressing at right angles to the direction of extension of the mounting surface (2).
2. Roof batten (1) according to or especially according to claim 1, characterized in that the grooves (7) have a curved and/or semicircular cross-sectional contour.
3. Roof batten (1) according to or especially according to one or more of the preceding claims, characterized in that the grooves (7) are disposed at regular intervals relative to one another.
4. Roof batten (1) according to or especially according to one or more of the preceding claims, characterized in that the spacing of the grooves (7, 8) is less then the width of a rafter (4).
5. Roof batten (1) according to or especially according to one or more of the preceding claims, characterized in that the cross-section of the grooves (7) tapers toward one end (7") and/or widens toward the other end (7').
6. Roof batten (1) according to or especially according to one or more of the preceding claims, characterized in that the front surface openings (7') of adjacent grooves (7) with the largest cross-section come into contact with one another, at least in the region of the edges of the mounting surface (2).
7. Roof batten (1) according to or especially according to one or more of the preceding claims, characterized in that the roof battens consist of plastic.
8. Assembly consisting of an underlayment as an intermediate layer between the roof batten (1) and rafters (4), especially a roof truss, characterized by aeration and drainage channels, progressing in the direction of the pitch of the roof, in the form of grooves (7), progressing at right angles to the direction of extension of the roof batten, in the mounting surface (2) of the roof batten (1), which lies essentially flat on the underlayment (3).

5 page(s) of drawings are included.

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Fig. 1

[see original for figure]

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Fig. 2

Fig. 3

Fig. 4

[see original for figures]

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Fig. 5

[see original for figure]

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Fig. 6

Fig. 7

Fig. 8

[see original for figures]

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Fig. 9

Fig. 10

Fig. 11

[see original for figures]

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This is to certify that the attached document, German Patent DE 44 21 941 A1, originally written in German is, to the best of our knowledge and belief, a true, accurate and complete translation into English.

Dated: March 8, 2005

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Sworn to and signed before
Me this 8TH day of
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